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10/784,303	02/24/2004	Shinji Yamaguchi	118837	2271

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EXAMINER
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MERKLING, MATTHEW J

ART UNIT	PAPER NUMBER
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1709

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05/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/784,303

Applicant(s)

YAMAGUCHI, SHINJI

Examiner

Matthew J. Merkling

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/24/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed:
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/24/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims directed to the following patentably distinct species:

Species I – As illustrated in Fig. 4(a,b)

Species II – As illustrated in Fig. 5

Species III – As illustrated in Fig. 6(a,b)

The species are independent or distinct because they have a materially different design.

Species I has a materially different design of a fine coating layer of a porous ceramic located on the surface of the partition wall on the purified gas outflow cell, and having a pore diameter smaller than the partition wall.

Species II has a materially different design of a particulate layer filled with a porous ceramic located on an inner layer portion of a pore in a partition wall and having a pore diameter smaller than the partition wall.

Species III has a materially different design of a course coating layer of porous ceramic located on the surface of the exhaust gas inflow cell, having a pore diameter larger than that of the partition wall, and further having an oxidation catalyst layer on the course coating.

Furthermore, there is nothing of record to show these species to be obvious variants.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, the catalyst carried filter with porous partition walls is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species.

MPEP § 809.02(a).

2. During a telephone conversation with Joe Lynn on 4/2/07 a provisional election was made with traverse to prosecute the invention of Species I, claims 1-4. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Vance et al. (US 2002/0178707).

Regarding claim 1, Vance discloses a catalyst-carried filter (Fig. 2 (10)) comprising:

a honeycomb structure (paragraph 8 (2)) including a plurality of cells which are partitioned by partition walls (See Fig. 2 (6)) constituted of a porous ceramic (paragraph 8) including a large number of pores to constitute a channel of a gas (See Fig. 2); and

an oxidation catalyst which is carried on the surfaces of the partition walls and inner walls of the pores existing in the partition walls to promote oxidation of particulates contained in an exhaust gas (paragraph 40), the plurality of cells including one opening end and the other opening end which are alternately clogged (See Fig. 2, (8 and 9)),

wherein the plurality of cells include exhaust gas inflow cells (4) whose one opening end is clogged (See Fig. 2) and in which the oxidation catalyst is carried on the surfaces of the partition walls (paragraph 40), and purified gas outflow cells (5) whose other opening end is clogged (Fig. 2), the exhaust gas inflow cells

and the purified gas outflow cells are alternately arranged (Fig. 2), and at least one fine coating layer (discriminating layer, (12)) constituted of a porous ceramic (paragraph 39) having an average pore diameter smaller than that of the porous ceramic constituting the partition wall (paragraph 39) is formed on the surface of the partition wall on the side of the purified gas outflow cell (paragraph 34, (12)).

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoj et al. (WO 00/01463).

Regarding claim 1, Hoj discloses a catalyst-carried filter (Fig. 7) comprising:  
a honeycomb structure (abstract) including a plurality of cells which are partitioned by partition walls (filter walls, page 17 lines 11-13) constituted of a porous ceramic (See claim 14 of Hoj) including a large number of pores to constitute a channel of a gas (page 17 lines 11-13); and

an oxidation catalyst which is carried on the surfaces of the partition walls and inner walls of the pores existing in the partition walls to promote oxidation of particulates contained in an exhaust gas (page 4, lines 9-13, page 3, lines 3-5), the plurality of cells including one opening end and the other opening end which are alternately clogged (page 17 lines 11-13),

wherein the plurality of cells include exhaust gas inflow cells whose one opening end is clogged (page 17 lines 11-13) and in which the oxidation catalyst is carried on the surfaces of the partition walls (page 3, lines 3-5), and purified gas outflow cells whose other opening end is clogged (page 17 lines 11-13), the

exhaust gas inflow cells and the purified gas outflow cells are alternately arranged (page 17 lines 11-13), and at least one fine coating layer (membrane) constituted of a porous ceramic (see claim 48 of Hoj) having an average pore diameter smaller than that of the porous ceramic constituting the partition wall (see abstract) is formed on the surface of the partition wall on the side of the purified gas outflow cell (see abstract, Fig. 5 (20)).

Regarding claim 2, Hoj, as discussed in claim 1 above, further discloses the pore diameter of the ceramic constituting the partition wall is preferably 40-80  $\mu\text{m}$  (see claim 31 of Hoj) and the average pore diameter of the fine coating layer (membrane) is 5-10  $\mu\text{m}$  (page 23 lines 31-32).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoj et al. (WO 00/01463) in view of Muramatsu et al. (US 5,384,110).

Regarding claim 3, Hoj, as discussed in claim 2 above, further discloses the porosity of the partition wall (filter wall) is preferably 40-75% (see claim 32 of Hoj). Hoj fails to teach the porosities of the fine coating layer (membrane) as 45-85%.

Muramatsu also discloses a catalyst carried filter.

Muramatsu teaches that the porosity of a thin layer (high density thin layer) on the outlet of the catalyst carried filter is preferably from 40-70% (col. 7 lines 39-46). Muramatsu teaches these ranges in order to allow the exhaust gas to easily enter into the pores of the partition walls (low density) and partially restrict the flow with the fine coating layer (high density) to allow for efficient removal of NO<sub>x</sub> by the catalyst in the partition wall (low density) (col. 7 lines 16-23).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the porosity ranges of Muramatsu for the fine coating layer in the catalyst carried filter of Hoj in order to allow the exhaust gas to easily enter into the pores of the partition walls (low density) and partially restrict the flow with the fine coating layer (high density) to allow for efficient removal of NO<sub>x</sub> by the catalyst in the partition wall (low density).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoj et al. (WO 00/01463) and Muramatsu et al. (US 5,384,110) as applied to claim 3 above, and further in view of Loncke (EP 1018357 A1).

Regarding claim 4, modified Hoj, as discussed in claim 3, discloses all of the claim limitations, but fails to teach the porosity of the partition wall (inlet side) is smaller than the fine coating layer (outlet side) by 5% or more.

Loncke also discloses a filter with two layers of differing porosities.



Loncke teaches the inlet side of the filter has a layer that exhibits a porosity of at least 20% more than the porosity of the second layer (outlet side) (paragraph 6) in order to limit the amount of pressure drop over the second layer and improving the pressure drop of the filter as a whole (paragraph 4 and 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a greater porosity on the inlet side of the filter than on the outlet side of the filter, as in Loncke, in the catalyst carried filter of Hoj in order to limit the amount of pressure drop over the second layer and improving the pressure drop of the filter as a whole.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Merkling whose telephone number is 571-272-9813. The examiner can normally be reached on Monday - Friday 8:30-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa D. Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*MM*

MJM

*Barbara Gilliam*

**BARBARA GILLIAM  
PRIMARY EXAMINER**